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**Interface Control Document
between the EOSDIS Core System
(ECS) and the National Oceanic and
Atmospheric Administration
(NOAA) Affiliated Data Center (ADC)
for the ECS Project**

Revision B

July 1997



National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

INTERFACE CONTROL DOCUMENT
between the
EOSDIS Core System (ECS) and the
National Oceanic and Atmospheric Administration (NOAA)
Affiliated Data Center (ADC)
for the ECS Project

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Preface

This document is a contract deliverable with an approval Code 1. It requires Government review and approval prior to acceptance and use. Once approved, contractor changes to this document are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

This document contains information pertaining to both Release B.0 and Release B.1 and is final for both releases.

Any questions should be addressed to:

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Abstract

This Interface Control Document (ICD) defines the functional and physical design of each interface between ECS and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC). It includes the precise data contents and format for each interface. All modes (options) of data exchange for each interface are described as well as the conditions required for each mode or option. Additionally, data rates, duty cycles, error conditions, and error handling procedures for the transfer of data are included. The sequence of exchanges are completely described. Communications protocols or physical media are also detailed for each interface.

This document contains information pertaining to both Release B.0 and Release B.1. For both Release B.0 and Release B.1 content, this document is final.

This ICD is consistent with the ECS/NOAA ADC interface requirements, as described in the NASA/NOAA Memoranda of Understanding (MOU), the Earth Science Data and Information System (ESDIS) Project -- Level 2 Requirements, the Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS Level 3 requirements), and the Interface Requirement Document (IRD) Between the ECS and the NOAA ADC.

Keywords: advertising, ancillary, browse, client, data, format, interface, interoperability, metadata, NESDIS, NOAA, request, SAA, search, user, V0, AM-1, CEMSCS, Release B.0, Release B.1, B0SOT, JEST.

CH01

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1. Introduction

1.1 Identification

This Interface Control Document (ICD), Contract Data Requirement List (CDRL) Item 029, whose requirements are specified in Data Item Description (DID) 209/SE1, is a required deliverable under the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS) Contract (NAS5-60000).

1.2 Scope

This ICD defines the system interfaces that exist between the ECS and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC) to support ECS Releases B.0 and B.1. Unless stated otherwise, all sections of this document apply to both Releases B.0 and B.1. The documentation in this ICD as it relates to both Release B.0 and Release B.1 is final.

ECS Releases are keyed to mission support: Release B functionality is divided between two main releases and a number of smaller deliveries between them timed to support specific mission elements. The first main installment is Release B.0. Release B.0 provides the software to support all external operational interfaces and the associated EOS Mission Integration Testing and Ground System Integration Testing that will be performed for the AM-1, Landsat-7, and SAGE III missions. The second major installment is Release B.1. Release B.1 has been structured to provide the full Release B capabilities to support the AM-1, Landsat-7, ADEOS II, RADAR ALT, and SAGE III missions. Release B.1 provides the full Release B capacity for data archival and data processing and provides support for science data for Levels 1-3. Releases C & D provide evolutionary enhancements to the ECS services provided in the earlier Releases.

This document describes the interface for the ECS acquisition of ancillary data from the NOAA National Environmental Satellite, Data, and Information Service (NESDIS); this includes data located at both the Central Environmental Satellite Computer System (CEMSCS) and the National Climatic Data Center (NCDC). In addition, ECS acquires ancillary data from the National Weather Service's (NWS) National Centers for Environmental Prediction (NCEP) via the Goddard Space Flight Center (GSFC) Distributed Active Archive Center (DAAC). This interface is described in the ICD Between ECS and the GSFC DAAC.

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This document also describes the interface which allows ECS users to access NOAA NESDIS data (i.e., one-way interoperability); this interface includes the NESDIS Satellite Active Archive (SAA) interface and the NESDIS Data Centers interface.

The Earth Science Data and Information System (ESDIS) Project has joint responsibility with NOAA for the development and maintenance of this ICD. Any changes in the interface must be agreed to by the relevant participating parties. This ICD will be approved under the signatures of

the ESDIS Project Manager and the Director, NOAA NESDIS Office of Satellite Data Processing and Distribution.

This document reflects the technical baseline maintained by the ECS Configuration Control Board in accordance with ECS technical direction (see Section 2.2).

1.3 Purpose and Objectives

This document is written to formalize the interpretation and general understanding of the interface between the ECS and the NOAA. This document provides clarification and elaboration of the ECS-NOAA ADC interfaces to the extent necessary to assure hardware, software, and operational service compatibility within the end-to-end system.

This document provides a point of mutual control of external interface definitions.

1.4 Status and Schedule

This version of the ICD is being prepared in order to update the Release B.0 and B.1 content. This ICD will be submitted to the ESDIS CCB as a Configuration Control Board (CCB) approval Code 1 document. This document is final with respect to its Release B.0 and Release B.1 content.

At the Government's option, this document may be designated to be under full Government CCB control. Changes may be submitted for consideration by Contractor and Government CCBs under the normal change process at any time.

Within this document are some interfaces that have associated TBRs, TBSs and/or TBDs. A table providing a Work-off Plan is in Appendix A. This plan provides the following information:

- a. ICD Interface Issue Number
- b. ICD Reference Paragraph
- c. Issue Priority
- d. ICD Issue Description
- e. Work-off Plan
- f. Projected Date of Issue Resolution
- g. Risk Assessment

1.5 Organization

This document is organized in 5 sections plus appendices. Section 1 provides information regarding the identification, scope, purpose and objectives, and organization of this document. Section 2 contains information about documentation relevant to this ICD, including parent, applicable, and information documents. Section 3 provides an overview of the interfaces, with a brief description of the elements involved. Section 4 provides an overview of the data exchange approaches. Section 5 contains a description of each data exchange between the ECS and

NOAA, the data transfer method, and descriptions of the data format. A Work-off plan is presented in Appendix A. An acronym list is in Appendix AB.

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2. Related Documentation

2.1 Parent Document

The following documents are the parents from which this document's scope and content are derived:

194-208-SE1-001	Methodology for Definition of External Interfaces for the ECS Project, 6/94	CH01
301-CD-002-003	System Implementation Plan for the ECS Project, 1/95	
304-CD-002-002	Science Data Processing Segment (SDPS) Requirements Specification for the ECS Project, 3/95	
304-CD-003-002	Communications and System Management Segment (CSMS) Requirements Specification for the ECS Project, 3/95	
210-TP-001-006	Technical Baseline for the ECS Project, 2/96	
423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work, 9/94	CH01
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the EOSDIS Core System (ECS), 11/94	
505-10-20	System Interface Control Plan for the Earth Science Data and Information System (ESDIS) Project, 9/95	
505-41-19	Goddard Space Flight Center, Interface Requirements Document Between the EOSDIS Core System (ECS) and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC), 7/97	CH01
none	Memorandum of Understanding Between the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration for Earth Observations Remotely Sensed Data Processing, Distribution, Archiving, and Related Science Support, 7/89	CH01
none	Goddard Space Flight Center, ECS Technical Direction No. 11, "PDR Technical Baseline," 12/94	

2.2 Applicable Documents

The following documents are referenced herein or are directly applicable to this document. In the event of conflict between any of these documents and this document, this document shall take precedence. Internet links cannot be guaranteed for accuracy or currency.

505-41-40	Interface Control Document Between EOSDIS Core System (ECS) and the Goddard Space Flight Center (GSFC) Distributed Active Archive Center (DAAC), 9/97	CH01
505-41-39	Interface Control Document Between the EOSDIS Core System (ECS) and the Langley Research Center (LaRC) Distributed Active Archive Center (DAAC), 4/97	CH01
305-CD-004-001	Overview of Release A SDPS/CSMS System Design Specification for the ECS Project, 7/95	
305-CD-020-002	Overview of Release B SDPS/CSMS System Design Specification for the ECS Project, 3/96	
505-41-30	Interface Control Document Between EOSDIS Core System (ECS) and the Version 0 System for Interoperability, 6/96	
541-032	Goddard Space Flight Center, Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC), 9/96	CH01
420-TD-045-001	ECS HTML Developer's Guide, 3/97	
420-TD-069-001	ODL Restrictions, ECS Specific and ODL Library Specific	CH01
none	NOAA-EBnet As-Built documentation, 4/96	
none	Hughes STX Corporation; NOAA/NESDIS Master Map Microwave Derived Products (EDR) Interface Control Document	
none	Langley Research Center, Clouds and the Earth's Radiant Energy System (CERES) Data Management System Interface Requirements Document, 9/94	
none	Jet Propulsion Laboratory, Planetary Data System Standards Reference, Version 3.1, 8/94 (WWW access: http://pds.jpl.nasa.gov/stdref/stdref.htm)	CH01
SASC-T-5-5085-028-85	National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, Solar Backscattered Ultraviolet Radiometer Version 2 (SBUV/2) User's Guide, Revision 3, 11/90	
none	National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, Environmental Products Data Set Format Description Notebook, NOAA/NESDIS Office of Satellite Data Processing and Distribution, J. Sapper	

none	National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, Global Vegetation Index User's Guide, 4/96	CH01
none	National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, NOAA Polar Orbiter Data Users Guide, 6/95	CH01
RFC 791	Internet Protocols, Internet Standards, DARPA (WWW access: gopher://ds.internic.net:70/)	
RFC 793	Transmission Control Protocol, Internet Standards, DARPA (WWW access: gopher://ds.internic.net:70/)	
RFC 959	File Transfer Protocol, Internet Standards, J. Postel, J. Reynolds (WWW access: gopher://ds.internic.net:70/)	
none	HyperText Markup Language Specification Version 3.0, Internet Draft, D. Raggett (WWW access: http://192.6.10.21/people/dsr/html/CoverPage.html)	
none	HyperText Transfer Protocol Version 1.0, Internet Draft, T. Berners-Lee, R. Fielding, H. Frystyk (WWW access: http://www.w3.org/hypertext/WWW/Protocols/Overview.html) 6/95	

2.3 Information Documents

The following documents (or in some cases, Internet links to documents/information), although not directly applicable, amplify or clarify the information presented in this document. These references are not binding on this document. Internet links cannot be guaranteed for accuracy or currency.

none	Hughes STX Corporation; Satellite Active Archive NOAA-SAA IMS Server Design Specification, Version 2.0; 5/6/94
none	Hughes STX Corporation; Version 0 Information Management System User's Manual (current version available through WWW access: http://harp.gsfc.nasa.gov:1729/eosdis_home.html)
none	Committee on Earth Observations Satellites Working Group on Data; Guidelines for an International Interoperable Catalogue System: Catalogue Subgroup Issue 2.1
none	NOAA's NESDIS World Wide Web Home Page (WWW access: http://ns.noaa.gov/NESDIS/NESDIS_Home.html)
none	Jamsa Press; Kris Jamsa PhD and Ken Cope; Internet Programming, 1995

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3. Interface Overview

The ECS and the NOAA ADC will coordinate to allow the exchange of data and information. The ECS will be interoperable with the NOAA so that an ECS user will be able to view the data holdings of, and order data from, NOAA. In addition, NOAA will provide mutually-agreed upon ancillary data sets to the ECS to support ECS standard product generation.

Two NOAA organizations will interface with ECS: the National Environmental Satellite, Data, and Information Service (NESDIS) and the National Weather Service (NWS). The interface within the NWS is the National Centers for Environmental Prediction (NCEP).

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NESDIS manages the U.S. operational civil environmental satellite systems as well as global data bases for meteorology, oceanography, solid-earth geophysics, and solar-terrestrial sciences. It develops and supplies environmental data and information products and services for numerous users. NESDIS maintains data in the Satellite Active Archive (SAA); the Central Environmental Satellite Computer System (CEMSCS), operated by Office of Satellite Data Processing and Distribution (OSDPD); and three data centers: the National Climatic Data Center (NCDC), the National Oceanographic Data Center (NODC), and the National Geophysical Data Center (NGDC). There is a direct interface between NESDIS and ECS. That interface is described in this document.

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NOAA's NCEP, part of the National Weather Service, produces, processes, handles, and distributes meteorological and oceanographic information to users. The NCEP produces weather summaries, and extended and medium-range forecasts. The NCEP interprets forecast models, develops and produces oceanographic products, provides weather support for special aerospace and satellite operations, and performs research and development to improve its satellite operations. ECS will acquire data sets from the NCEP via the GSFC DAAC. The interface between the GSFC DAAC and ECS for transfer of NCEP data is described in the ICD Between ECS and the GSFC DAAC.

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ECS supports the planning, scheduling, and control of U.S. EOS spacecraft and instruments. In addition to fully supporting the EOS mission, the ECS provides information management and data archive and distribution functions for NASA Earth science flight missions, NASA instruments flown on non-NASA spacecraft, and for other NASA-held Earth science data.

The ECS system will become operational in distinct phases, called Releases. The initial release, Release B.0, incorporates a copy of the EOSDIS Version 0 (V0) IMS Client as the user interface to the ECS data holding. This client is called the B.0 Search and Order Tool (B0SOT). During Release B.0, the ECS interface with NOAA supports two distinct functions. The first is to allow ECS users to search, browse, and order data resident in the NESDIS SAA and to locate data advertised by the NESDIS Data Centers. The second is to support timely ECS access to NOAA data sets at the CEMSCS and Data Centers which are required as ancillary data for the generation of ECS standard products.

For ECS Release B.1, the web-based JAVA Earth Science Tool (JEST) will be introduced and will replace the B0SOT. The B0SOT client will, however, be supported into the B.1 timeframe, concurrent with JEST to provide a transition.

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JEST will not directly interface with the NESDIS SAA. Instead ECS will provide a V0 Gateway that will relay requests from JEST to the NESDIS SAA. Responses sent from the NESDIS SAA will likewise pass through the Gateway on their way to JEST. The NESDIS view of this interface will not change from that of Release B.0. ECS will continue to access NOAA data sets required as ancillary data for the generation of ECS standard products.

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Figure 3-1 depicts the operational context of the interfaces between the ECS and the NOAA at Release B.0. Through the B.0 Search and Order Tool and the existing SAA Information Management System (IMS) Server, ECS will provide catalog interoperability between ECS and the SAA. Both the SAA and the NESDIS Data Centers will be able to advertise the data and services that they provide via the ECS Advertising Service. ECS users will be able to search the Advertising Service and link (transfer the user's session) directly to the advertised services. The SAA will provide dependent valids information to the V0-ECS Science Team which will integrate all V0 dependent valids information into a master Valids File and Valids Support File. Each time the B.0 Search and Order Tool is initialized it will download the latest version of this valids information. ECS will also receive several ancillary data products from the NESDIS CEMSCS and Data Centers on a regular basis.

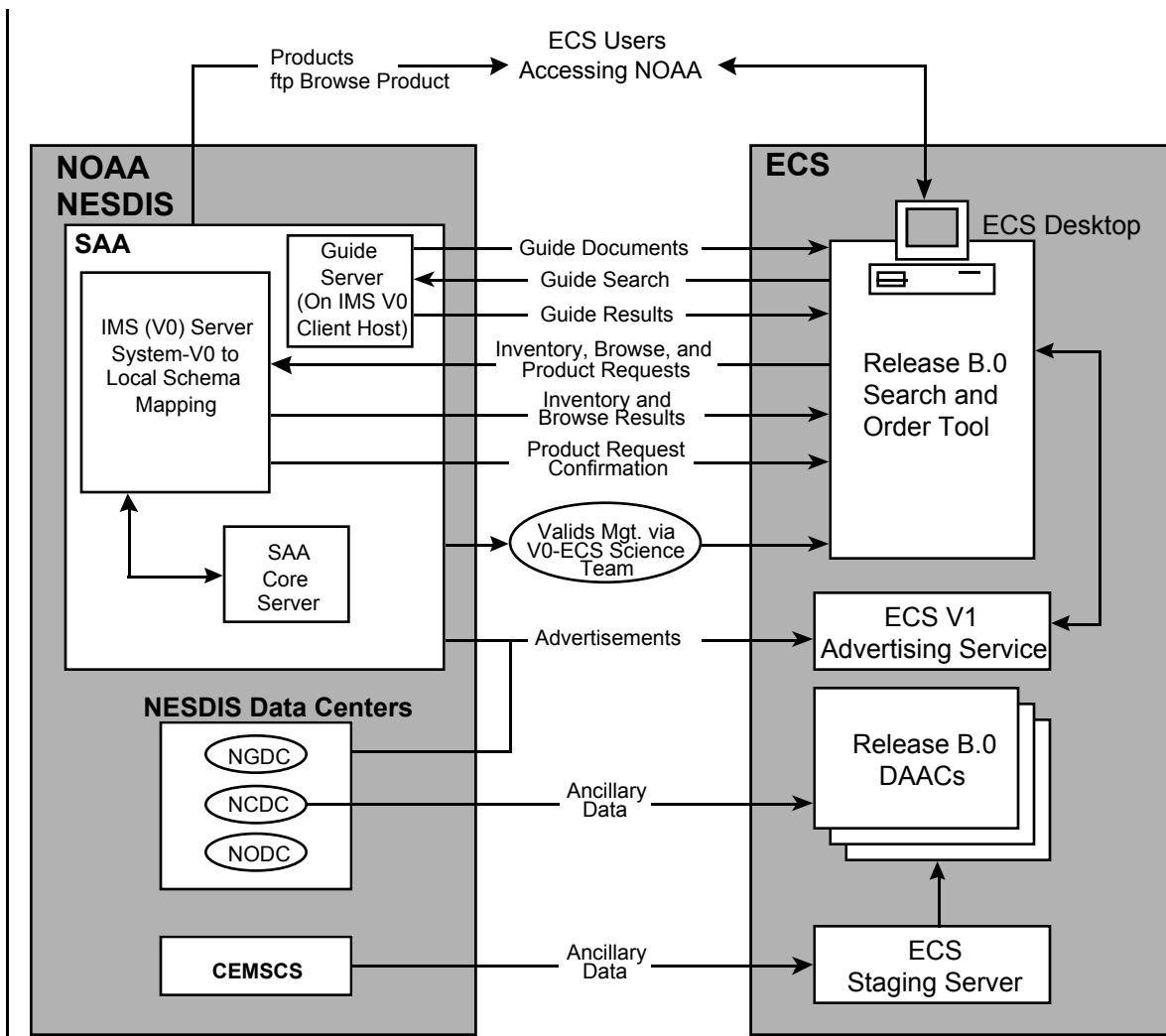
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Figure 3-2 depicts the operational context of the interfaces between the ECS and the NOAA at Release B.1 (after JEST has replaced the B0SOT). Through the Gateway and the existing SAA IMS Server, ECS will continue to provide catalog interoperability between the ECS and the SAA. Both the SAA and the NESDIS Data Centers will continue to be able to advertise the data and services that they provide via the ECS Advertising Service. ECS users will be able to search the Advertising Service and link (transfer the user's session) directly to the advertised services. The SAA will continue to provide dependent valids information. This information will now be imported directly into ECS by an ECS Operator using the Import function of the Data Dictionary Maintenance Tool. The dependent valids information will be incorporated into the Data Dictionary where it will be accessed by JEST and the Advertising Service. ECS will continue to receive several ancillary data products from the NESDIS CEMSCS and Data Centers on a regular basis.

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Figure 3-1. ECS/NOAA Interface Context Diagram for Release B.0

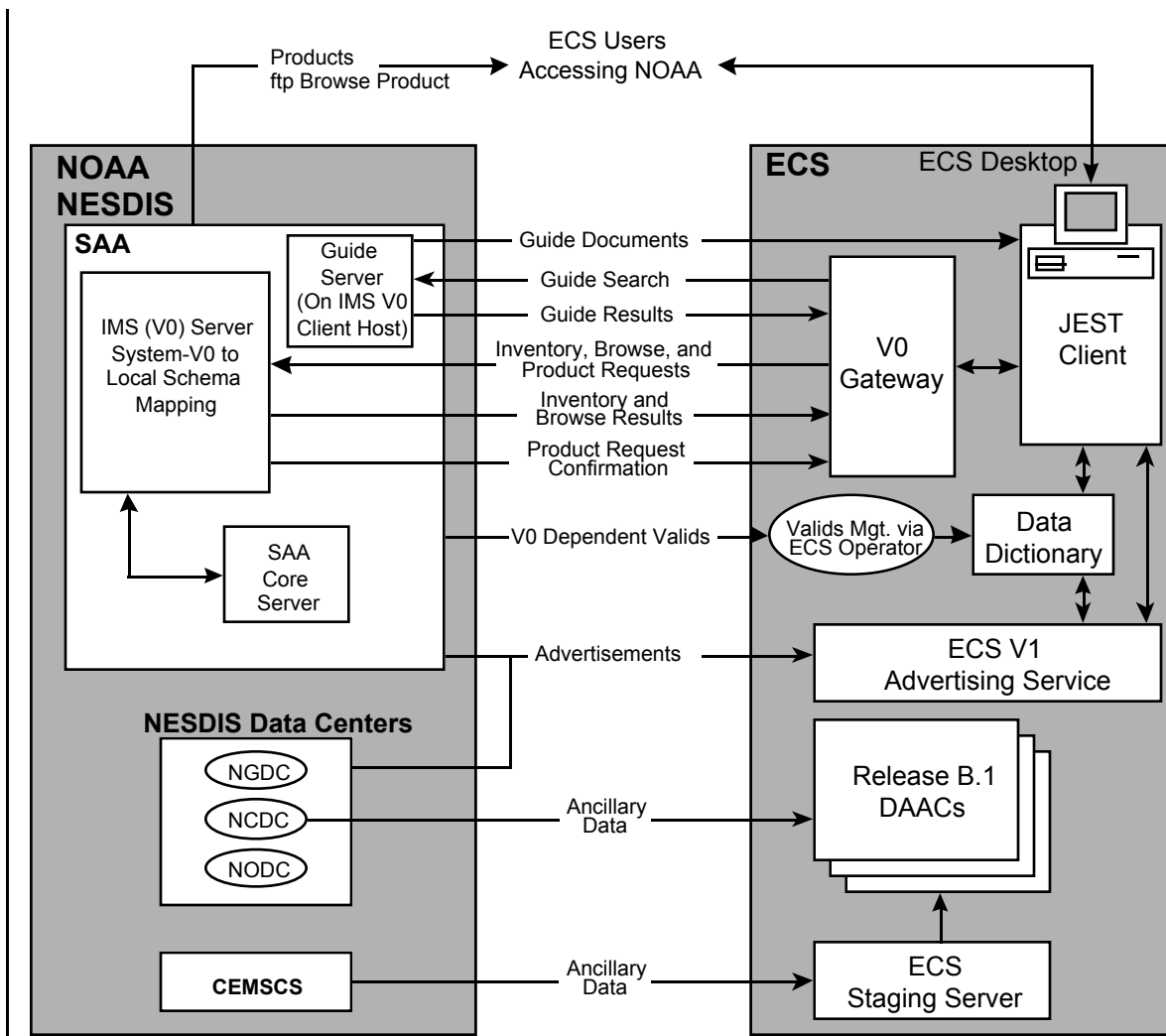


Figure 3-2. ECS/NOAA Interface Context Diagram for Release B.1

4. Data Exchange Infrastructure

This section addresses the applicable data exchange protocols for handling the functions discussed in Section 3. Specifically, this section will address the protocols relevant to the NESDIS SAA, the NESDIS CEMSCS, and the NESDIS Data Centers.

With respect to the NESDIS SAA, this section will address protocols that allow the ECS Client to search, browse and order data resident in the NESDIS SAA, including support for both catalog interoperability and the Advertising Service interfaces.

With respect to the NESDIS CEMSCS, this section will address protocols that allow the electronic retrieval of NESDIS ancillary data products by the ECS.

With respect to the NESDIS Data Centers this section will address protocols 1) that allow the Data Centers to provide advertising information to the ECS, and 2) that retrieve NESDIS NCDC ancillary data products to ECS via physical media.

For the SAA, the CEMSCS, and the Data Centers, the relevant protocols from the various layers of the Open System Interconnection Reference Model are discussed. These layers include the physical network topology, the datalink and physical services, the network services, transport services, and the higher level services that support the session, presentation, and application protocols.

4.1 Communications/Protocol Interfaces

4.1.1 Interoperability and Advertising Service

4.1.1.1 Interoperability and Advertising Service for the NESDIS SAA

The interface that ECS will use to perform catalog interoperability and to access and order SAA products requested by ECS users at Release B.0 is already built and operational. The B.0 Search and Order Tool will incorporate the existing EOSDIS V0 IMS Client as the ECS user interface. The SAA IMS Server is the link between the B.0 Search and Order Tool and the SAA Core Server.

In Release B.1, a combination of the web-based JEST client and the V0 Gateway will provide catalog interoperability with the NESDIS SAA. This combination will replace the B0SOT. The B0SOT will be supported into the B.1 timeframe, however, to provide a transition. The new interface will be identical from NOAA's viewpoint. All changes are internal to ECS.

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The SAA IMS Server is maintained by the NOAA NESDIS Office of Satellite Data Processing and Distribution (OSDPD) in Suitland, Maryland. The connection between the ECS and the SAA IMS Server is made using the available internet connections.

The SAA Guide Server is maintained by NOAA NESDIS OSDPD on a combined Wide Area Information Server (WAIS) and World Wide Web server that is integrated with the SAA IMS V0 Client host located at NESDIS. The connection between the ECS and the SAA IMS Server is made using the available internet connections.

The interface that NOAA will use to submit advertisements to ECS is the World Wide Web. A NOAA operator will access an ECS Advertising Server to submit or modify advertisements. The ECS Advertising Server is maintained by ECS. The connection between the operator's Web browser and the Advertising Server is made using the available internet connections.

4.1.1.2 Interoperability and Advertising Service for the NESDIS CEMSCS

The ECS/NESDIS CEMSCS interface does not support catalog interoperability or the advertising service.

4.1.1.3 Interoperability and Advertising Service for the NESDIS Data Centers

The interface that NOAA will use to submit advertisements to ECS is the World Wide Web. A NOAA operator will access an ECS Advertising Server to submit or modify advertisements. The ECS Advertising Server is maintained by ECS. The connection between the operator's Web browser and the Advertising Server is made using the available internet connections.

4.1.2 Ancillary Data Transfer

4.1.2.1 Ancillary Data Transfer for the NESDIS SAA

The ECS/NESDIS SAA interface does not support ancillary data transfer.

4.1.2.2 Ancillary Data Transfer for the NESDIS CEMSCS

At Releases B.0 and B.1, ancillary data will be pushed via ftp by the NESDIS CEMSCS to the ECS Staging Server, which resides outside of the ECS firewall. The ftp transfer from CEMSCS to the Staging Server will require the use of a username and password by CEMSCS. The ancillary data will then be retrieved from the ECS Staging Server by the ECS system within the ingesting DAAC. The interfaces between the ECS at the ingesting DAAC and the ECS Staging Server, and between the ECS Staging Server and CEMSCS are provided by EBnet and documented by the Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC) and the NOAA-EBnet As-Built documentation.

4.1.2.3 Ancillary Data Transfer for the NESDIS Data Centers (NCDC)

At Release B.0 and Release B.1, ancillary data will be received via physical media from NESDIS NCDC by the ECS system within the Langley Research Center (LaRC) DAAC.

4.2 Physical/Datalink Services

4.2.1 Interoperability and Advertising Service

4.2.1.1 Interoperability and Advertising Service for the NESDIS SAA

The connection between the ECS and the SAA IMS Server is made using the physical/datalink services of the available internet connections.

The connection between the ECS and the SAA Guide Server is made using the physical/datalink services of the available internet connections.

The connection between the operator's Web browser and the Advertising Server is made using the physical/datalink services of the available internet connections.

4.2.1.2 Interoperability and Advertising Service for the NESDIS CEMSCS

The ECS/NESDIS CEMSCS interface does not support catalog interoperability or the advertising service.

4.2.1.3 Interoperability and Advertising Service for the NESDIS Data Centers

The connection between a NOAA Data Center operator's Web browser and the Advertising Server is made using the physical/datalink services of the available internet connections.

4.2.2 Ancillary Data Transfer

The interface between the ECS system and NESDIS to support ancillary data transfer is provided by EBnet and is documented in the Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC) and the NOAA-EBnet As-Built documentation.

4.2.2.1 Ancillary Data Transfer for the NESDIS SAA

The interface between the ECS system and the NESDIS SAA does not support the transfer of ancillary data.

4.2.2.2 Ancillary Data Transfer for the NESDIS CEMSCS

The interface between the ECS system and the NESDIS CEMSCS to support ancillary data transfer is provided by EBnet and is documented in the Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC) and the NOAA-EBnet As-Built documentation.

4.2.2.3 Ancillary Data Transfer for the NESDIS Data Centers (NCDC)

Ancillary data is transferred from NESDIS NCDC to the ECS system via physical media only. The physical media interface between the ECS system and the NCDC to support ancillary data transfer consists of mailing 8mm Exabyte tapes from NCDC to the following address at LaRC for ingest:

Langley DAAC User and Data Services Office
 Langley DAAC
 MS 157D
 Bldg. 1268C, Room 1328L
 NASA Langley Research Center
 Hampton, VA 23681-0001.

4.3 Network Layer Services

For all NESDIS interfaces, the network layer provides the functional and procedural means to exchange network data units between transport entities over network connections, both for connection-mode and connections less-mode communications. It relieves the transport layer from concern of all routing and relay operations associated with network connection. The basic function of the network layer is to provide the transparent transfer of data between transport entities.

The Internet Protocol (IP), specified in RFC 791 is the network protocol that ECS and NOAA support based on its dominance in industry usage and wide-community support. As part of IP support, Internet Control Message Protocol and Address Resolution Protocol will also be supported. As the Internet Engineering Task Force specified new generation IP becomes available for deployment, it will be supported by ECS networks.

For the SAA interface, this protocol is used by the interoperability interfaces, including the Guide, and advertising service.

CH01

For the CEMSCS interface, this protocol is used by the ancillary data transfer interface.

For the Data Center interface, this protocol is used by the advertising service interface.

4.4 Transport Services

For all NESDIS interfaces, ECS and NOAA provide IP based connection-oriented service implemented using Transmission Control Protocol (TCP). TCP, specified in RFC 793, is a connection-oriented, end-to-end reliable protocol designed to fit into a layered hierarchy of protocols which support multi-network applications.

For the SAA interface, this protocol is used by the interoperability interfaces, including the Guide, and advertising service.

CH01

For the CEMSCS interface, this protocol is used by the ancillary data transfer interface.

For the Data Center interface, this protocol is used by the advertising service interface.

4.5 Session, Presentation, and Application Protocols

4.5.1 Object Description Language (ODL)

For the SAA interface, communication between the ECS and the SAA IMS Server is achieved using the same message protocols as used in the existing V0 system. This is the Object Description Language (ODL), a language developed by JPL to encode data labels for the Planetary Data System and other NASA data systems. The ODL implementation used between ECS and the SAA IMS Server is described in the ICD Between the ECS and V0 System for Interoperability. Full ODL specification is defined in the Planetary Data System Standards Reference. ODL restrictions imposed by the shareware parser implementation are described in the document entitled ODL Restrictions, ECS Specific and ODL Library Specific.

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The V0 message protocols provide error handling by embedding a status code, which can include error information, in the results returned for a query. This is described in the ICD Between the ECS and V0 System for Interoperability.

This protocol is not applicable to the CEMSCS interface.

This protocol is not applicable to the Data Centers interface.

4.5.2 HyperText Markup Language (HTML)/HyperText Transfer Protocol (HTTP)

For the SAA and Data Center interfaces, ECS and NOAA will use HyperText Markup Language (HTML). HTML will also be used for accessing the NOAA Guide data. HTML is a simple markup language used to create hypertext documents that are portable from one platform to another. HTML documents are Standard Generalized Markup Language documents with generic semantics that are appropriate for representing information from a wide range of applications. The protocols for HTML are defined in HyperText Markup Language Specification Version 3.0. HTML, Version 3.0 is backwards compatible with HTML 2.0.

CH01

The HyperText Transfer Protocol (HTTP) is an application-level protocol that will be used to transfer advertisements created using the HTML. HTTP will also be used to access the SAA Guide Server. The basic version of HTTP is defined in the HyperText Transfer Protocol, Version 1.0, Internet-Draft. This document also defines status codes, which can include error information, that are returned as a result of transferring information via HTTP.

This protocol is not applicable to the CEMSCS interface.

4.5.3 File Transfer Protocol (ftp)

4.5.3.1 File Transfer Protocol (ftp) for NESDIS SAA

The interface between the ECS and the NESDIS SAA does not utilize the File Transfer Protocol (ftp).

4.5.3.2 File Transfer Protocol (ftp) for NESDIS CEMSCS

ECS will utilize an automated File Transfer Protocol (ftp) interface to identify and acquire the ancillary data from the NESDIS CEMSCS via the ECS Staging Server without operator input. The CEMSCS will push the updated ancillary data files to the ECS Staging Server. Each file name will be preceded by a period (.) during the ftp transmission to the Staging Server. Once the transmission of each file is complete CEMSCS will send the ftp *rename from* and *rename to* commands to remove the period in front of the name. The ingesting DAAC will periodically poll the ECS Staging Server to identify the updated ancillary data. The ingesting DAAC will use the polling without delivery record protocol to retrieve ancillary data files from the ECS Staging Server. An operator-tunable timer is used to initiate the periodic polling of the ECS Staging Server. When the DAAC determines that a retrieved ancillary data file is new, it will ingest the file. Otherwise, it will not ingest the file. This interface is depicted in Figure 4-1.

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The CEMSCS will provide the data specified in Section 5.3.2 to ECS. When updated ancillary data is available the CEMSCS will push this data to the ECS Staging Server, which resides outside the ECS firewall, via the ftp *put* command. The file transfer will use the image (binary) type representation. Each file name will be preceded by a period (.) during the ftp transmission to the Staging Server. Once the transmission of each file is complete the ftp *rename from* and *rename to* commands will be used to remove the period in front of the name. This ftp action is automated and does not required operator input. Each data type will be pushed to a separate and unique subdirectory on the ECS Staging Server. The specific name and location of these directories is shown in Section 5.3.2. The CEMSCS will use a controlled username and password to open the ftp session. The username and password required to gain access to the Staging Server, as well as the Staging Server's IP address will be documented in the NOAA Operations Agreement or the Operations Mission Procedures Manual (DID 611), as appropriate.

CH01

If the transmission of any of the files is unsuccessful, the ftp *put* command would be repeated up to an operator tunable number of times. When all the files have been transmitted to the ECS Staging Server and renamed, CEMSCS closes the ftp session. CEMSCS repeats this process for each updated data set.

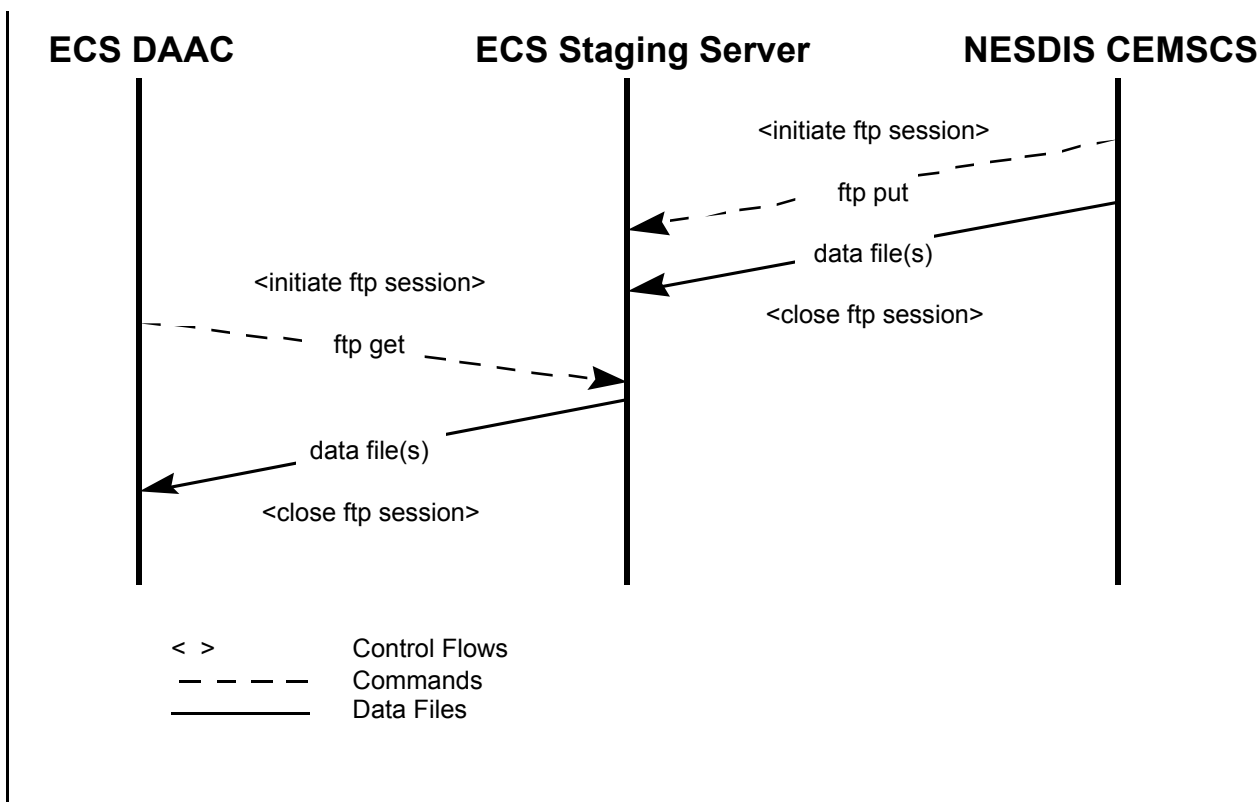
CH01

The identification and retrieval of new data granules from the ECS Staging Server will involve the process depicted in Figure 4-1. First, the ingesting DAAC establishes a ftp session to the appropriate subdirectory for a given data type. Next, the DAAC issues a ftp *get* command to retrieve the file. The file transfer will use the image (binary) type representation. Once retrieved, the file is compared to the last version of that file that was ingested. If the files are identical, the new file is not ingested. If the new file is different from the previous version of the file, it is ingested as a new file. This process is automated and does not require operator input.

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If the ingest of a file results in an error and is unsuccessful, the ftp *get* command would be repeated up to an operator tunable number of times. When all the files have been retrieved, ECS closes the ftp session. ECS repeats this process for each subdirectory on the ECS Staging Server to which the CEMSCS pushes data.

File transfer Protocol (ftp) used by ECS to retrieve the ancillary data is detailed in RFC 959. This document also defines the ftp error handling features.



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Figure 4-1. Polling Interface

4.5.3.3 File Transfer Protocol (ftp) for NESDIS Data Centers (NCDC)

The interface between the ECS and the NESDIS NCDC does not utilize the File Transfer Protocol (ftp).

4.5.4 Wide Area Information Server

WAIS will be used to search the SAA Guide. WAIS is a networked information retrieval system that enables client applications to retrieve text or multimedia documents stored on a server. A modified version of WAIS 0.202 is used. Version 0.202 has been modified so the "equal sign" (=) and the "underscore symbol" (_) are recognized as alphabetic characters.

The client application submits a request for documents using keywords. The server performs a search of a full text index for the documents and returns a list of documents using those keywords. The client may then request the server to send a copy of any of the documents.

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5. Data Flow Descriptions

5.1 General

This section contains an overview of each data interface between ECS and the NOAA. Each data flow in the interface is identified and defined, including the functional purpose of the flow, the system that initiates the flow, the format and the contents of the flow.

5.2 ECS/SAA Data Flows

5.2.1 ECS/SAA Interoperability Data Flows

The purpose of the ECS/SAA Interoperability Data Flows is to allow ECS users to access data resident on the NOAA SAA. The ECS/SAA interface does not support SAA users accessing ECS data via the ECS/SAA interface.

As previously described, the B.0 Search and Order Tool will reuse the existing EOSDIS V0 IMS Client as the ECS user interface. Likewise, the V0 Gateway will act as a proxy of the EOSDIS V0 IMS Client for the JEST Client in Release B.1. The V0 System currently provides users the ability to search the SAA Inventory and Guide. Users can also submit Browse Requests, and Product Requests. ECS users will continue to have these capabilities through Releases B.0 and B.1.

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The SAA IMS Server is the link between the ECS and the SAA Core Server. This SAA IMS Server translates messages from the V0 ODL message format to the SAA message format and passes the message to the SAA Core Server. It also translates responses from the SAA Core Server into ODL for transmission to the ECS.

User authentication information is included in a field within the Inventory Search Request, the Browse Request, and the Product Request. This is true for both Release B.0 and B.1. No separate user authentication message will exist. The details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

Cost estimate data is acquired dynamically via the Inventory Search Request beginning in Release B.1. The cost estimate data is returned in a field of the Inventory Search Result. The cost estimate data is maintained on the NESDIS SAA IMS V0 Server. The details of this interface are documented in the Inventory Search Request and Inventory Search Result documentation in the ICD Between the ECS and the V0 System for Interoperability.

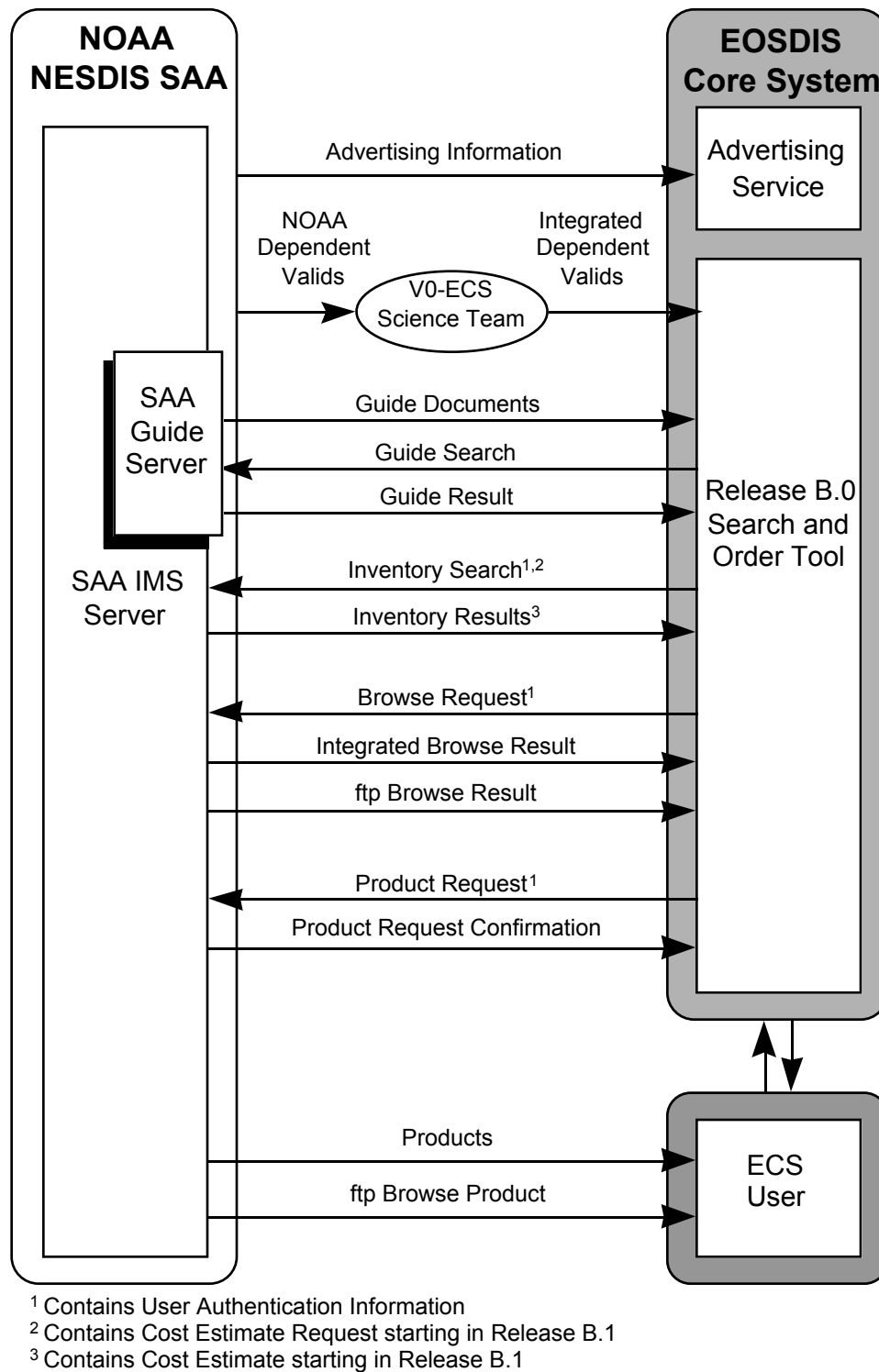
In addition to the interoperability functions provided by the V0 protocols, ECS users will be able to search Advertising Information placed in the ECS Advertising System by NOAA that describes data and service available from NOAA.

The ECS/SAA data flows supporting interoperability during the Release B.0 timeframe are shown in Figure 5-1. The ECS/SAA data flows supporting interoperability during the Release B.1 timeframe are shown in Figure 5-2.

5.2.1.1 Advertising Information

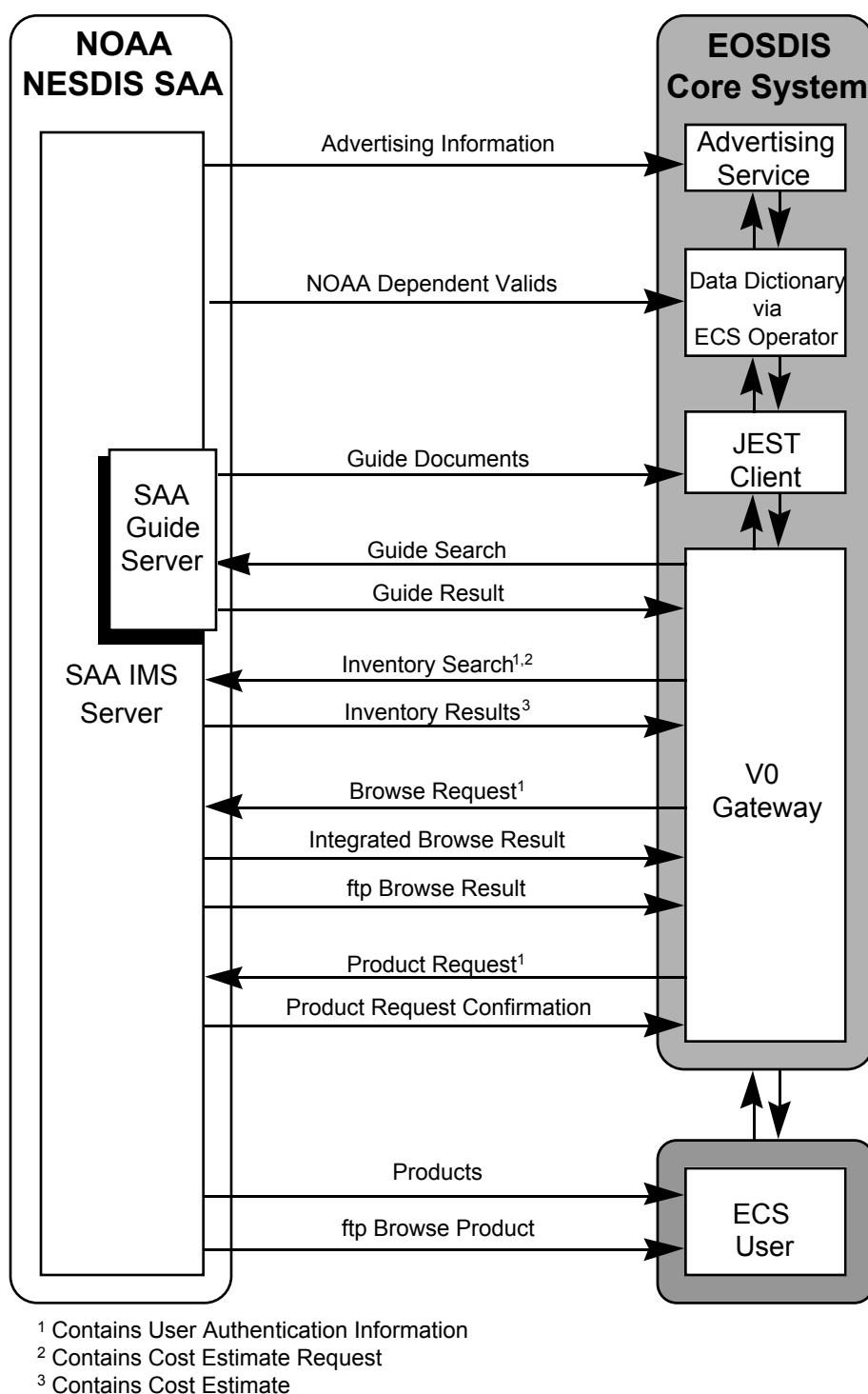
The Advertising Information is sent from the SAA to the ECS. Its purpose is to provide information sufficient to allow an ECS user to locate data and services located at the SAA. The ECS Advertising Service will utilize HTML protocols and will accept advertisements via an interactive HTML-form based interface.

An SAA operator will be able to initiate an ECS Advertising Service session and link to the Advertisement Submission Form. From this form, the operator will be able to submit new advertisements or modify existing advertisements. The operator will provide information such as the description of the product, service, or service provider being advertised and information on access restriction, pricing, and copyright limitation. Product descriptions will include items such as temporal and geographic coverage, processing level, sensor, and parameter inputs. The name, address, phone numbers, and e-mail address to contact regarding the advertisement will also be entered. The operator may also submit graphical icons or logos, and Universal ReferenceLocation (URL) links.



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Figure 5-1. Release B.0 ECS to SAA Interoperability Data Flows



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Figure 5-2. Release B.1 ECS to SAA Interoperability Data Flows

When the operator presses the submit button, the contents of the form will be assembled into a data block of the form:

`action?name=value&name=value&name=value`

where 'name' is the title of an input field on the form and 'value' is the information entered. This data block is posted to the Advertising Service URL where it is processed.

ECS will receive the advertisement and, after reviewing and approving the advertisement, will send the SAA operator via e-mail either a confirmation that the advertisement has been posted to the Advertising Service or a statement that the advertisement has been rejected and the reason for the rejection.

5.2.1.2 Deleted

5.2.1.3 Guide Query/Results

The purpose of the guide query is to retrieve SAA Guide documents. The SAA Guide was developed using the same HTML protocols as the V0 Guide and stored on the SAA Guide Server.

In Release B.0, the guide queries will be sent from the B.0 Search and Order Tool to the SAA Guide Server. Guide results are returned to the B.0 Search and Order Tool. The SAA Guide documents are then accessed directly from the B.0 Search and Order Tool using HTTP. The details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

In Release B.1, the guide queries will be sent from the V0 Gateway to the SAA Guide Server. Guide results are returned to the V0 Gateway which provides them to the JEST Client. The SAA Guide documents are then accessed directly from the JEST Client using HTTP. The details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

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5.2.1.4 Inventory Search

The Inventory Search is sent from the ECS to the SAA at an ECS user's initiation. Its purpose is to search the SAA inventory. User authentication information and a request for cost estimate data are embedded in the Inventory Search.

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In Release B.0, the Inventory Search is sent from the B.0 Search and Order Tool to the SAA IMS Server.

In Release B.1, the Inventory Search is sent from the V0 Gateway to the SAA IMS Server.

This interface is identical to the existing V0 interface for Inventory searching and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.1.5 Inventory Search Result

The Inventory Search Result is sent from the SAA to the ECS in response to an Inventory Search. Its purpose is to return metadata, including cost estimate data, describing the granules meeting the Inventory Search's search criteria.

In Release B.0, the Inventory Search Result is sent from the SAA IMS Server to the B.0 Search and Order Tool.

In Release B.1, the Inventory Search Result is sent from the SAA IMS Server to the V0 Gateway.

This interface is identical to the existing V0 interface for Inventory search results and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.1.6 Browse Request

The Browse Request is sent from the ECS to the SAA at an ECS user's initiation. Its purpose is to obtain browse information for selected SAA products. The user may specify either an integrated or ftp browse. User authentication information is embedded in the Browse Request.

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In Release B.0, the Browse Request is sent from the B.0 Search and Order Tool to the SAA IMS Server.

In Release B.1, the Browse Request is sent from the V0 Gateway to the SAA IMS Server.

This interface is identical to the existing V0 interface for Browse Requests and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.1.7 Browse Result

5.2.1.7.1 Integrated Browse Result

The Integrated Browse Result is sent from the SAA to the ECS. Its purpose is to deliver an SAA browse product in response to a Browse Request specifying an Integrated Browse Result.

In Release B.0, the Integrated Browse Result is sent from the SAA IMS Server to the B.0 Search and Order Tool.

In Release B.1, the Integrated Browse Result is sent from the SAA IMS Server to the V0 Gateway.

This interface is identical to the existing V0 interface for Integrated Browse Results and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.1.7.2 FTP Browse Result

The FTP Browse Result is sent from the SAA to the ECS. Its purpose is to return to the browse product requester information enabling him to retrieve his browse product from the ftp site where it has been staged. The FTP Browse Result is sent in response to a Browse Request specifying an FTP Browse Result.

In Release B.0, the FTP Browse Result is sent from the SAA IMS Server to the B.0 Search and Order Tool.

In Release B.1, the FTP Browse Result is sent from the SAA IMS Server to the V0 Gateway.

This interface is identical to the existing V0 interface for FTP Browse Results and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.1.8 Deleted

5.2.1.9 Product Request/Product Request Confirmation

The Product Request is sent from the ECS to the SAA at an ECS user's initiation. Its purpose is to place an order for selected SAA products. User authentication information is embedded within the Product Request.

CH01

In Release B.0, the Product Request is sent from the B.0 Search and Order Tool to the SAA IMS Server.

In Release B.1, the Product Request is sent from the V0 Gateway to the SAA IMS Server.

This interface is identical to the existing V0 interface for Product Requests and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

The SAA will respond by sending a Product Request Confirmation message to the ECS and by delivering the requested product directly to the user. The Product Request Confirmation provides a confirmation of the SAA's receipt of the Product Request and provides contact information for further inquiries.

CH01

In Release B.0, the Product Request Confirmation is sent from the SAA IMS Server to the B.0 Search and Order Tool.

In Release B.1, the Product Request Confirmation is sent from the SAA IMS Server to the V0 Gateway.

This interface is identical to the existing V0 interface for Product Results and the details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

The user may use the information provided as part of the Product Result message to contact NOAA directly to obtain product delivery status information. SAA products are delivered directly to the requester; the ECS is not involved.

5.2.1.10 Deleted

5.2.1.11 Dependent Valid Information

The purpose of the dependent valids information is to provide key metadata information about the SAA data to the clients and Advertising System. The clients use this information to provide prompts to the user during the formulation of a query. In Release B.0, the dependent valids information from the SAA is updated in the same manner as the dependent valids information from the other V0 Servers. Specifically, the SAA will provide dependent valids information to the V0-ECS Science Team which will integrate all V0 dependent valids information into a master Valid File and Valid Support File. Each time the B.0 Search and Order Tool is initialized it will download the latest version of this valids information.

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During Release B.1, ECS will employ the combination of the V0 Gateway and the JEST client. The SAA will continue to provide dependent valids information. This information will now be imported directly into ECS by an ECS Operator using the Import function of the Data Dictionary Maintenance Tool. The dependent valids information will be incorporated into the Data Dictionary where it will be accessed by JEST.

CH01

The details of this interface are documented in the ICD Between the ECS and V0 System for Interoperability.

5.2.2 Ancillary Data Transfer

The ECS/SAA interface does not support ancillary data transfer.

5.2.3 Interface Management

5.2.3.1 Network Management Information Exchange

Network management information will be provided by Ebnet to ECS per the Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC).

5.3 ECS/CEMSCS Data Flows

5.3.1 ECS/CEMSCS Interoperability Data Flows

ECS/CEMSCS interface does not support catalog interoperability.

5.3.2 CEMSCS Ancillary Data Transfer

As described in Section 4.5.3.2, ECS will utilize an automated ftp interface to identify and acquire the ancillary data required from the NESDIS CEMSCS to support ECS standard product generation. The CEMSCS will push the files to the ECS Staging Server and the ingesting DAAC will use a polling without delivery record protocol to ingest the files from the ECS

Staging Server. New files are identified and retrieved without operator input. The ancillary data will be placed on the ECS Staging Server as described below. The ancillary data selection was derived from the Clouds and the Earth's Radiant Energy System (CERES) Data Management System IRD and the IRD Between ECS and the NOAA ADC. This section identifies the requirements for ancillary data products in the Release B.0 and Release B.1 of ECS.

ECS will initiate the polling interface at operator selected intervals. The nominal polling frequency will be at least twice the frequency with which the ancillary data files are updated and is a configurable parameter. ECS will use the file creation date information in the ftp file listing to identify updated data sets. ECS and the NESDIS CEMSCS will coordinate which subdirectories on the ECS Staging Server are used to stage this data when it becomes available.

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5.3.2.1 Third Generation Global Vegetation Index

The Third Generation Global Vegetation Index data products are part of the NOAA Polar-orbiting Operational Environmental Satellite (POES) Series Advanced Very High Resolution Radiometer (AVHRR) data. The vegetation index data set contains composites of the normalized vegetation index, AVHRR channels 1, 2, 4, and 5, quality/cloud data, solar zenith angles, scan angles, the precipitable water index. These data are mapped to Plate Carree projection with a resolution of 16 km. The Plate Carree maps data from 75 deg N to 55 deg S. This data set contains nine Earth Science Data Types (ESDTs), one for each file.

File Name: PRD.SARS.VEG.BLEVEL.TyydddVI

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/vi

ESDT Short Name: VegIndx3

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddC1,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/c1

ESDT Short Name: VegIxc1

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddC2,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/c2

ESDT Short Name: VegIxc2

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddC4,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/c4

ESDT Short Name: VegIxc4

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddC5,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/c5

ESDT Short Name: VegIxc5

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddQC,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/qc

ESDT Short Name: VegIxQCD

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddSZ,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/sz

ESDT Short Name: VegIxSZA

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddSC,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/sc

ESDT Short Name: VegIxScA

CH01

File Name: PRD.SARS.VEG.BLEVEL.TyydddTD,

where: yy = last two digits of the year (e.g., 97)

ddd = the Julian day

Staging Server Directory: /vegindex/td

ESDT Short Name: VegIxPWI

CH01

File Size: 2.3 MB per file for a total of 20.7 MB per set

Frequency: 1 set of 9 files per week

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is defined in Global Vegetation Index User's Guide. The metadata associated with these data are defined in the same document. The Third Generation Global Vegetation Index files use the IBM floating point convention.

5.3.2.2 Aerosol Global Analyzed File

The Aerosol Global Analyzed File is produced from the NOAA POES Series AVHRR data and contains total aerosol optical thickness retrievals calculated from channel 2 albedo observations. The aerosol data provides a global 1 degree map of aerosol optical thickness based on a composite of one week's worth of data.

File Name: PRD.AEROSOL.FIELD.KM100

Staging Server Directory: /aerosol

ESDT Short Name: WKAERSOL

File Size: 1.4 MB

Frequency: 1 file per week

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is defined in the NOAA NESDIS Environmental Products Data Set Format Description Notebook maintained by the NOAA NESDIS Office of Satellite Data Processing and Distribution. The metadata that will be extracted from these data are defined in the same document. The Aerosol Global Analyzed File uses the IBM floating point convention.

5.3.2.3 Snow/Ice Cover (Navy Algorithm)

The Snow/Ice Cover data is based on the Defense Meteorological Sensing Platform (DMSP) Special Sensor Microwave/Imager (SSM/I) data. NESDIS receives this data from the Fleet Numerical Meteorological Operations Center (FNMOC) and generates 1/8th mesh, 512x512, polar stereographic grids. These grids, referred to as Environmental Data Record (EDR) Master Maps are updated in near real-time as NESDIS receives new data from FNMOC. There is one file per hemisphere for each of the two operational DMSP satellites. Each EDR Master Map file contains multiple image maps including one for Snow Depth and one for Sea Ice Concentration.

File Name: PRD.SPPROD.F10EDRSH
 PRD.SPPROD.F10EDRNH
 PRD.SPPROD.F13EDRSH
 PRD.SPPROD.F13EDRNH

Staging Server Directory: /snow&ice

ESDT Short Name: SNOWICEN

File Size: 10.5 MB per file for a total of 42.0 MB per set

Frequency: One set of 4 files per day

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is defined in the Master Map Microwave Derived Products (EDR) Interface Control Document authored by Hughes STX and maintained by the NOAA NESDIS Office of Satellite Data Processing and Distribution. The metadata that will be extracted from these data are defined in the same document. The Snow/Ice Cover data set uses the IBM floating point convention.

5.3.2.4 SBUV/2 Stratospheric Ozone Profiles

These ozone data are generated from NOAA POES Series Solar Backscattered Ultraviolet Radiometer/Version 2 (SBUV/2) and include global data. The ozone data maps include, on a global scale, total ozone concentrations and the vertical distribution of ozone in the earth's atmosphere.

File Name: PRD.OZONE.DPM3OP
 PRD.OZONE.DPM1OP

Staging Server Directory: /sbuvozon

ESDT Short Name: OZON_SB

File Size: 1.7 MB per file for a total of 3.4 MB per set

Frequency: 1 set of 2 files per day

Release: B.0 and B.1

Ingesting DAAC: LaRC

The structure of each file is described below in Table 5-1 below.

CH01

Record (and NOAA File Number)	Record Size (Bytes)	Notes
Multi-Day Product Master File (PMF) Directory (714)	828	
Daily PMF Directory (710)	828	
Operational Ozone Product System Header I (241)	720	Record from which ECS Ingest strips metadata
Operational Ozone Product System Header II (242)	720	
Daily PMF Directory (710)	828	
PMF Orbital Header Record (741)	828	The PMF Orbital Header Record, PMF Data Record, and PMF Orbital Trailer Record are repeated as a set for each orbit.
PMF Data Record (761)	828	The PMF Orbital Header Record, PMF Data Record, and PMF Orbital Trailer Record are repeated as a set for each orbit.
PMF Orbiter Trailer Record (781)	828	The PMF Orbital Header Record, PMF Data Record, and PMF Orbital Trailer Record are repeated as a set for each orbit.
PMF Daily Trailer Record (785)	828	

CH01

Table 5-1. SBUV/2 Stratospheric Ozone Profile File Structure

The format of the data records is defined in SBUV/2 User's Guide maintained by the NOAA NESDIS Office of Satellite Data Processing and Distribution. The formats of the metadata records are defined in the same document. The SBUV/2 Stratospheric Ozone Profiles use the IBM floating point convention.

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5.3.2.5 HIRS/2 Column Ozone

ECS will acquire the total ozone concentration data generated from the NOAA POES Series High Resolution Infrared Radiation Sounder/Version 2 (HIRS/2). The HIRS/2 instrument is a step-scanned multi-channel spectrometer with 20 channels. The instrument has a resolution of 17 km at nadir. The packed level 1B data include all 20 channels at 13 bit precision with time

tags, Earth location and calibration information. Channel 9 provides the total ozone concentration measurements.

File Names: PRD.TOV.S.DSD3S1
PRD.TOV.S.DSD3S2

Staging Server Directory: /hirsozon

ESDT Short Name: OZ_TOVS

File Size: 21.25 MB per file for a total of 42.5 MB per set

Frequency: One set of 2 files per day

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is given in the NOAA Polar Orbiter Data Users Guide. The metadata associated with these data are defined in the same document. The HIRS/2 Column Ozone product uses the IBM floating point convention.

5.3.2.6 (Deleted)

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5.3.3 Interface Management

5.3.3.1 Schedule Adjudication

ECS and NESDIS will coordinate via telephone for the explanation and resolution of ancillary data delivery scheduling conflicts.

5.3.3.2 Network Management Information Exchange

Network management information will be provided by Ebnet to ECS per the Interface Control Document Between the EOSDIS Backbone Network (EBnet) and the Distributed Active Archive Center (DAAC).

5.4 ECS/NOAA Data Centers Data Flows

5.4.1 ECS/Data Centers Interoperability Data Flows

5.4.1.1 Advertising Information

The purpose of the interface between the ECS and the NOAA Data Centers is to facilitate ECS user access to data held at those centers and to provide ancillary data to ECS for the production of ECS standard products.

To provide greater user access to data sets held at the NESDIS Data Centers, ECS will receive Advertising Information from the Data Centers. The Advertising Information is sent from the Data Centers to the ECS. Its purpose is to provide information sufficient to allow an ECS user to

locate data and services located at the Data Centers. The ECS Advertising Service will utilize HTML protocols and will accept advertisements via an interactive HTML -form based interface.

A Data Center operator will be able to initiate an ECS Advertising Service session and link to the Advertisement Submission Form. From this form, the operator will be able to submit new advertisements or modify existing advertisements. The operator will provide information such as the description of the product, service, or service provider being advertised and information on access restriction, pricing, and copyright limitation. Product descriptions will include items such as temporal and geographic coverage, processing level, sensor, and parameter inputs. The name, address, phone numbers, and e-mail address to contact regarding the advertisement will also be entered. The operator may also submit graphical icons or logos, and Universal Reference Location (URL) links.

When the operator presses the submit button, the contents of the form will be assembled into a data block of the form:

action?name=value&name=value&name=value

where 'name' is the title of an input field on the form and 'value' is the information entered. This data block is posted to the Advertising Service URL where it is processed.

ECS will receive the advertisement and, after reviewing the advertisement, will send the Data Center operator via e-mail either a confirmation that the advertisement has been posted to the Advertising Service or a statement that the advertisement has been rejected and the reason for the rejection.

5.4.2 Ancillary Data Transfer

As described in Section 4.5.3.3, ECS will utilize a physical media interface to acquire ancillary data from the Data Centers. The ancillary data that NCDC will mail to ECS are described below. The ancillary data selection was derived from the IRD Between ECS and the NOAA ADC. This section identifies the requirements for ancillary data products in the Release B.0 and Release B.1 of ECS.

5.4.2.1 International Satellite Cloud Climatology Project (ISCCP) Level B1 Data (Geostationary Satellite Data Only)

The ISCCP Level B1 data set contains visible and infrared radiance data from imaging radiometers onboard the GOES-East, GOES-West, GMS, and METEOSAT satellites, collected as part of the International Satellite Cloud Climatology Project (ISCCP) which focuses on the derivation of a global climatology of cloud radiative properties. These radiance values have been reduced from the original resolutions to a resolution of 10 km.

The ISCCP Level B1 data is processed through the cooperation of several processing centers. The Satellite Processing Centers (SPC) perform the initial processing of the data to the B1 level. This data is then sent to NOAA/NCDC for archival and delivery to the Goddard Space Flight Center Institute for Space Studies (GISS) for processing to higher level products. The SPC for the GOES-West data is Colorado State University. The SPC for the GOES-East data is the

Atmospheric Environment Service (AES) in Ontario, Canada. The SPC for METEOSAT is EUMETSAT in Darmstadt, Germany, and the SPC for GMS is the Meteorological Satellite Center located in Tokyo, Japan. The SPCs provide Level B1 data in different formats, so each will be treated separately below.

A standing order has been negotiated with NCDC. Approximately once a month NCDC will ship ISCCP Level B1 data to ECS for ingest at the LaRC DAAC. Each 8mm Exabyte tape will contain data in the TAR format and will contain data from only one satellite. The tapes will be sent to the following address:

Langley DAAC User and Data Services Office
 Langley DAAC
 MS 157D
 Bldg. 1268C, Room 1328L
 NASA Langley Research Center
 Hampton, VA 23681-0001.

In case of a problem with this interface the operator can contact NCDC via the following e-mail address: <kkidwell@ncdc.noaa.gov>.

5.4.2.1.1 ISCCP Level B1 Data From GOES-West

NCDC will provide one month of data on one 8mm Exabyte tape. The tape will contain only the actual GOES-W ISCCP B1 data files and will not contain a directory file. The data on the 8mm Exabyte tape will be in the TAR format.

Once the tape arrives at ECS, the contents from the tape will be unTARed and copied into a single directory on an internal ECS server. ECS will use the polling without delivery record protocol to ingest the data from the internal server.

File Names: Fnnnnnl

nnnnn - tape number (e.g., 12345)

l - file designator (e.g., B= file 2 on the tape)

ESDT Short Name: ISCCP_GW

File Size: 2.4 GB per month

Frequency: 1 set (approximately 240 files per set) per month

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is defined in CSU Level B1 Data Description. The metadata associated with these data are defined in the same document.

5.4.2.1.2 ISCCP Level B1 Data From GOES-East

NCDC will provide one month of data on two 8mm Exabyte tapes. One tape will contain only the data files (file name format B1yyyymmddhhnn) and the other will contain only the orbit and attitude data (file name format OAYyyyymmddhhnn). Both tapes will include only the files listed above and neither tape will include a directory file. The data on both 8mm Exabyte tapes will be in the TAR format. Each file type will have an ESDT.

Once each tape arrives at ECS, the contents from the tape will be unTARed and copied into a single directory on an internal ECS server. ECS will use the polling without delivery record protocol to ingest the data from the internal server.

File Names: B1yyyymmddhhnn where:

yyyy = year (e.g., 1996)

mm = month (e.g., 01=January)

dd = day of the month (e.g., 05)

nn = minute (e.g., 15)

ESDT Short Name: ISCCP_GE

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File Name: OAYyyyymmddhhnn where:

yyyy = year (e.g., 1996)

mm = month (e.g., 01=January)

dd = day of the month (e.g., 05)

nn = minute (e.g., 15)

ESDT Short Name: ISCCPGE2

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File Size: 2.4 GB per month

Frequency: 1 set (approximately 480 files per set) per month

Release: B.0 and B.1

Ingesting DAAC: LaRC

The format of these data is defined in AES Data Format Variances From CSU Data in conjunction with CSU Level B1 Data Description. The metadata associated with these data are defined in the same document.

5.4.2.1.3 ISCCP Level B1 Data From METEOSAT

NCDC will provide one month of data on one 8mm Exabyte tape. The tape will contain only the actual METEOSAT ISCCP B1 data files and will not contain a directory file. The data on the 8mm Exabyte tape will be in the TAR format.

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Once the tape arrives at ECS, the contents from the tape will be unTARed and copied into a single directory on an internal ECS server. ECS will use the polling without delivery record protocol to ingest the data from the internal server.

File Names: Mnnnn where:

nnnn = file number

ESDT Short Name: ISCCP_MS

File Size: 1.2 GB per month

Frequency: 1 set (approximately 240 files per month)

Release: B.0 and B.1

Ingesting DAAC: LaRC

5.4.2.1.4 ISCCP Level B1 Data From GMS

NCDC will provide one month of data on one 8mm Exabyte tape. The tape will contain only the actual GMS ISCCP B1 data files and will not contain a directory file. The data on the 8mm Exabyte tape will be in the TAR format.

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Once the tape arrives at ECS, the contents from the tape will be unTARed and copied into a single directory on an internal ECS server. ECS will use the polling without delivery record protocol to ingest the data from the internal server.

File Names: Gnnnn where:

nnnn = file number

ESDT Short Name: ISCCPGMS

File Size: 1.3 GB per month

Frequency: 1 set (approximately 240 files per month)

Release: B.0 and B.1

Ingesting DAAC: LaRC

5.4.3 Interface Management

ECS and NESDIS will coordinate via telephone for the explanation and resolution of ancillary data delivery scheduling conflicts.

5.5 ECS/NCEP Data Flows

ECS will acquire data sets from the NCEP via the GSFC DAAC. The interface between the GSFC DAAC and ECS for transfer of NCEP data is described in the ICD Between ECS and the GSFC DAAC.

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Appendix A. Work-off Plan

ICD Issue #	ICD Para. #	Issue Priority *	ICD Issue Type - Description	Work-off Plan Task(s)	Projected Resolution Date	Risk Assessment**		
1	4.1.2 4.2.2	A	TBD - EBnet is developing ICDs with connected sites, but these ICDs have not yet been finalized.	Work is in progress. When the EBnet ICD has been completed, it will be referenced.	Completed			
2	4.5.3	B	TBD - ftp File Listing Content definition	Obtain File Listing Format from NOAA	Completed			
3	5.2.1.2	A	TBS - User authentication protocol between ECS and the V0 system is currently undefined	This issue will be worked as part of the V0 ICD. The plan is to obtain agreement between ESDIS, the DAACs and ECS on this protocol.	Completed			
4	5.2.3.1 5.2.3.2 5.2.3.3 5.2.3.4	A	TBR - The definition and completeness of the ancillary data format and metadata information must be reviewed and validated	Obtain complete set of documentation on these data from NOAA by early August. ECS will review documentation and coordinate with NOAA to obtain any additional information needed	Completed Completed			
5	5.2.1.3	A	TBR - The definition of how the ECS Client in Release B will interact with the SAA Guide is still in work.	ECS will continue to work this as part of the normal design process between IDR and CDR.	Completed			
6	5.2.4.2	A	TBD - Define what additional management data exchange is necessary	ECS will continue to work this as part of the normal design process between IDR and CDR.	Completed			
7	4.1.2 4.2.2 5.2.4.2	C	TBD - Receive as-built documentation reflecting EBnet/NOAA interface from ESDIS	ECS is coordinating with ESDIS on this task. The documents have been sent via mail.	Completed			

8	5.2.3.1	A	TBD - Define name of vegetation index metadata file	ECS is coordinating this task with NOAA and expects to receive the file name within the week.	Completed			
9	4.5.3	A	TBD - Define method to avoid ingesting partially written files.	ECS is coordinating with NOAA to define a method to ensure integrity of ingested files.	Completed			
10	4.5.3	B	TBD - Define format of ls-l file listing	ECS has obtained this information from NOAA.	Completed	1. No risk. 2. Risk of delaying development of interface.		
11	5.2.3	B	TBD -Define internet address of SAA Data Delivery Server	ECS has obtained this information from NOAA.	Completed	1. No risk. 2. Risk of delaying development of interface.		
12	5.2.3.1 5.2.3.2 5.2.3.3 5.2.3.4 5.2.3.5	B	TBD - Define subdirectories for each data product	ECS has obtained this information from NOAA.	Completed	1. No risk. 2. Risk of delaying development of interface.		
13	5.2.3.5	A	TBD - Define format of Total Ozone Concentration Data	ECS has obtained this information from NOAA.	Completed	1. No risk 2. Risk of delaying development of interface, including ingest and dataserver activities.		
14.	5.3	A	TBD - Define ISCCP B1 data (as done for SAA products in section 5.2.3)	ECS has obtained most information regarding this data set.	Completed	1. No risk 2. Risk of delaying development of interface, including ingest and dataserver activities.		
15.	5.3	A	TBD - Define GPCC data (as done for SAA products in section 5.2.3)	ECS has obtained most information regarding this data set.	Completed	1. No risk 2. Risk of delaying development of interface, including ingest and dataserver activities.		

16.	3	B	TBD - Describe the NOAA/ECS interface for Release C.	ECS is documenting this interface at this time.	Completed	1. No risk 2. Minimal risk. ECS has developed interface to facilitate 2-way interoperability at Release C.	
17	5.3.2.1	C	TBD - Determine static operator e-mail address	Contacting M&O to determine plans for establishing static operator e-mail address	Completed	1. No risk 2. No risk. Requirement for GPCC data set has been deleted	
18	5.3.2	C	TBD - Document IP address of staging server	IP address will be documented in the NOAA Operations Agreement or the Operations Mission Procedures Manual, as appropriate.	Completed	1. No risk 2. No risk	
19	5.3.2.6	B	TBD - Determine file names for NSCAT data.	Contacted NOAA for information. Data is being sent.	Completed	1. No risk 2. Minimal risk -- no significant portion of interface design is dependent on this info	CH01
20	5.3.2.6	B	TBD - Determine staging server directory	Contacting George Mellis to coordinate	Completed	1. No risk 2. Minimal risk -- no significant portion of interface design is dependent on this info	CH01
21	5.3.2.1	B	TBD - Determine ESDT names for Vegetation Index files	Working with Karl Cox on ESDT names	Completed	1. No risk 2. Minimal risk -- Additional of ESDT names would cause small impact	CH01
22.	5.4.2.1.2	B	TBD - Determine ESDT names for GOES-E files	Working with Karl Cox on ESDT names	Completed	1. No risk 2. Minimal risk -- Additional of ESDT names would cause small impact	CH01

* Issue Priority Definition:

A = Design impact. E.g., unresolved interface.

B = Minimal design impact. E.g., content or format of a specific field unresolved.

C = No design impact - administrative detail. E.g., reference document # not available.

**** Risk Assessment Definition:**

- 1 - Risk if issue is not resolved by CDR
- 2 - Risk if issue is not resolved by projected resolution date

Abbreviations and Acronyms

ADC	Affiliated Data Center	
AES	Atmospheric Environment Service (Canada)	
AVHRR	Advanced Very High Resolution Radiometer	
B0SOT	[Release] B.0 Search and Order Tool	CH01
CCB	Configuration Control Board	
CDR	Critical Design Review	
CDRL	Contract Data Requirements List	
CEMSCS	Central Environmental Computer System	CH01
CSMS	Communications and System Management Segment	
CSU	Colorado State University	
DAAC	Distributed Active Archive Center	
DARPA	Defense Advanced Research Projects Agency	
DCN	document change notice	
DID	Data Item Description	
DMSP	Defense Meteorological Sensing Platform	
EBnet	EOS Backbone Network	
ECS	EOSDIS Core System	
EDOS	EOS Data Operations Systems	
EDR	Environmental Data Record	
EOC	EOS Operations Center	
EOS	Earth Observing System	
EOSDIS	EOS Data and Information System	
ESDIS	Earth Science Data and Information System	
ESDT	Earth Science Data Type	
ESN	EOSDIS Science Network	
FNMOCC	Fleet Numerical Meteorological Operations Center	

ftp	File Transfer Protocol	
GISS	Goddard Space Flight Center Institute for Space Studies	
GOES	Geostationary Operational Environmental Satellite	
GMS	Geostationary Meteorological Satellite	
GPCC	Global Precipitation Climatology Center	
GPCP	Global Precipitation Climatology Project	
GPI	Global Precipitation Index	
HIRS/2	High Resolution Infrared Radiation Sounder Version 2	
HTML	HyperText Markup Language	
HTTP	HyperText Transfer Protocol	
ICD	Interface Control Document	
IDR	Incremental Design Review	
IMS	Information Management System	
IP	Internet Protocol	
IRD	Interface Requirements Document	
ISCCP	International Satellite Cloud Climatology Project	
JEST	JAVA Earth Science Tool	CH01
LaRC	Langley Research Center	
MOU	Memorandum of Understanding	
NASA	National Aeronautics and Space Administration	
NESDIS	National Environmental Satellite, Data, and Information Service	
NCDC	National Climatic Data Center (NOAA)	
NCEP	National Centers for Environmental Prediction (NOAA)	CH01
NGDC	National Geophysical Data Center (NOAA)	
NOAA	National Oceanic and Atmospheric Administration	
NODC	National Oceanographic Data Center (NOAA)	
NSIDC	National Snow and Ice Data Center	
NWS	National Weather Service	CH01
ODL	Object Description Language	

OSDPD	Office of Satellite Data Processing and Distribution
PMF	Product Master File
POES	Polar-orbiting Operational Environmental Satellite
RACF	Resource Access Control Facility
SAA	Satellite Active Archive
SBUV/2	Solar Backscattered Ultraviolet Radiometer, Version 2
SDPS	Science Data Processing Segment
SPC	Satellite Processing Center
SSM/I	Special Sensor Microwave/Imager
TCP	Transmission Control Protocol
TBR	To Be Reviewed
TBD	To Be Determined
TBS	To Be Supplied
TRMM	Tropical Rainfall Measuring Mission
V0	Version 0
WAIS	Wide Area Information Server

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